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In re Application of: :
Tomoaki TAMURA et al. : Art unit: 2851
Serial No. 09/165,315 :
Filed: October 2, 1998 :
For: PRINT SYSTEM :
_____x

DECLARATION

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

I, Masahiro SUGISAWA hereby declare and say as follows:

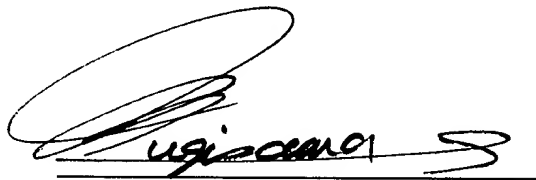
I am familiar with both the English and Japanese languages and I have compared the annexed English translation with the Japanese text of Japanese Patent Application No. 271288/1997.

To the best of my knowledge and belief, the annexed English translation is an accurate translation of the above Japanese application.

The undersigned declares further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with

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the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the U.S. Code and that such willful false statements may jeopardize the validity of the above-identified application or any patent issuing thereon.

A handwritten signature in black ink, appearing to read 'Masahiro Sugisawa', is written over a horizontal line.

Masahiro SUGISAWA

Dated: This 3rd day of June, 2002.



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**[NAME OF THE DOCUMENT]**

SPECIFICATION

[TITLE OF THE INVENTION]

PRINT SYSTEM

[THE SCOPE OF THE PATENT CLAIM]

[Claim 1] A printing system equipped with an electronic camera which prepares digital image information and with a printing apparatus which receives order information from the electronic camera to conduct printing, wherein the electronic camera to conduct printing, wherein the electronic camera is equipped with a print information providing means which generates order information by providing print information corresponded to the digital image information and with a transmitting-receiving means which conducts transmission and receiving of data, while the printing apparatus is equipped with a receiving means which receives order information from the electronic camera, a printing means which makes prints based on the received order information, a display means which displays information, and a control means which generates order receiving information based on the received order information and makes the display means to display the order receiving information.

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[Claim 2] The printing system according to claim 1, wherein the printing apparatus stated above is equipped with a transmitting means, and the control means controls so that the transmitting means transmits order receiving information to the electronic camera based on order information received from the electronic camera.

[Claim 3] The printing system according to claim 2, wherein the electronic camera is equipped with a display means capable of displaying information on which the information of the state of order receiving from the printing apparatus is displayed.

[Claim 4] The printing system according to claim 2 or 3, wherein the information of the state of order receiving is represented by the waiting time up to completion of prints.

[Claim 5] The printing system according to claim 2 or 3, wherein the information of the state of order receiving is represented by the display showing whether the order receiving for prints is normal or not.

[Claim 6] The printing system according to claim 1, wherein print information generated by the print information providing means includes personal information which makes it possible to call an orderer of prints.

[Claim 7] The printing system according to claim 6, wherein the printing apparatus stated above is equipped with a message transmitting means and transmits a message with reference to the personal information when prints are completed.

[Claim 8] The printing system according to claim 1, wherein the electronic camera is equipped with a display means capable of displaying information and a countdown means, and the countdown means counts down based on the state of order receiving coming from the printing apparatus, while the display means displays the results of the countdown.

[Claim 9] The printing system according to claim 8, wherein the countdown means counts down based on the state of order receiving coming from the printing apparatus and notifies the end of counting when the counting is ended.

[Claim 10] The printing system according to claim 8, wherein the electronic camera is equipped with a control means which controls various operations, and this control means prohibits deletion of images included in the order information until the countdown means finishes counting.

[Claim 11] The printing system according to claim 10, wherein the electronic camera is equipped with a control means which generates state information relating to the state

of the electronic camera and adds this state information to the order information, and the control means of the printing apparatus reads the state information added to the order information.

[Claim 12] The printing system according to claim 11, wherein the printing apparatus is equipped with a warning giving means which gives warning by means of display, voice or data transmission, while the control means of the printing apparatus gives warning when batteries of the electronic camera are estimated, based on the state information, not to last until completion of transmission for order information.

[Claim 13] The printing system according to claim 12, wherein the control means of the printing apparatus gives warning based on the state information stated above when the electronic camera is not energized by the external power supply.

[Claim 14] The printing system according to claim 12, wherein the electronic camera is equipped with a display means capable of displaying information, and receives data from the warning giving means to display warning information from the printing apparatus on the display means.

[DETAILED DESCRIPTION OF THE INVENTION]

(0001)

[BACKGROUND OF THE INVENTION]

The present invention relates to a printing system, and more specifically, to a printing system suitable for printing of image information obtained through photographing.

(0002)

[PRIOR ART]

There has recently been conducted printing wherein a print is made by a color printer from digital image information obtained by using a digital camera for photographing.

(0003)

There has also been proposed a service wherein prints with high image quality are made by processing or printing, using an expensive equipment, based on the digital image information.

In consideration of the time required for preparing contents of the order in the store and confusion generated there, it has also been proposed that digital image information obtained through photographing is inputted and processed in a computer to prepare the order information in advance, and this order information is transferred to a recording medium which permits installation and removal (PC

card, various memory cards and others) to be used for order receiving for prints.

(0004)

[PROBLEM TO BE SOLVED BY THE INVENTION]

However, in the way to process after inputting in the computer, there may be a problem that the order information can not be produced easily, because it needs a computer in addition to the digital camera.

(0005)

Further, when digital image information recorded on the recording medium that permits installation and removal is accepted on an order receiving apparatus, order receiving is repeated many times. Accordingly, there is a possibility that the recording medium or a contact of the order receiving apparatus is worn away to make accurate order receiving impossible.

(0006)

When ordering prints, using the recording medium as that stated above, a user can not confirm whether the order has been correctly placed or not, which is a problem.

(0007)

Therefore, it sometimes happens that a user is told to order again due to troubles in the ordering, when the user visits a store to get prints.

Further, there is no means with which a user confirms in the case of order placing how long has he or she wait until completion of prints or when prints have been completed, which has been a problem.

(0008)

Therefore, a first object of the invention is to realize a print system capable of producing order information easily, conducting receiving accurately, and confirming the situation in the receiving by a user.

(0009)

Therefore, a second object of the invention is to realize a print system capable of producing order information easily, conducting receiving accurately, and confirming a waiting time for the complete in printing by a user.

(0010)

[MEANS FOR SOLVING THE PROBLEMS]

(1) The invention described in claim 1 is that a printing system equipped with an electronic camera which prepares digital image information and with a printing apparatus which receives order information from the electronic camera to

conduct printing, wherein the electronic camera to conduct printing, wherein the electronic camera is equipped with a print information providing means which generates order information by providing print information corresponded to the digital image information and with a transmitting-receiving means which conducts transmission and receiving of data, while the printing apparatus is equipped with a receiving means which receives order information from the electronic camera, a printing means which makes prints based on the received order information, a display means which displays information, and a control means which generates order receiving information based on the received order information and makes the display means to display the order receiving information.

(0011)

On this printing system, order receiving information is generated based on order information received from the electronic camera on the part of the printing apparatus, and the display means is caused to display the order receiving information.

(0012)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the

electronic camera, whereby a printing system wherein a user can confirm the state of order receiving can be realized.

(0013)

(2) The invention described in claim 2 is that the printing system according to (1), wherein the printing apparatus stated above is equipped with a transmitting means, and the control means controls so that the transmitting means transmits order receiving information to the electronic camera based on order information received from the electronic camera.

(0014)

In the printing system, order receiving information is transmitted from the transmitting means on the part of the printing apparatus to the electronic camera based on the order information received from the electronic camera.

(0015)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can confirm the state of order receiving by the use of the electronic camera.

(0016)

(3) The invention described in claim 3 is that the printing system according to (2), wherein the electronic camera is

equipped with a display means capable of displaying information on which the information of the state of order receiving from the printing apparatus is displayed.

(0017)

In the printing system, order receiving information is transmitted from the transmitting means on the part of the printing apparatus to the electronic camera based on the order information received from the electronic camera. The electronic camera displays information of the state of order receiving from the printing apparatus on the display means.

(0018)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can confirm the state of order receiving on the display means of the electronic camera.

(0019)

(4) The invention described in claim 4 is that the printing system according to (2)~(3), wherein the information of the state of order receiving is represented by the waiting time up to completion of prints.

In the printing system, order receiving information is transmitted from the transmitting means on the part of the

printing apparatus to the electronic camera based on the order information received from the electronic camera. The electronic camera displays information of the state of order receiving from the printing apparatus (the waiting time up to completion of prints).

(0020)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can confirm the state of waiting time by the use of the electronic camera.

(0021)

(5) The invention described in claim 5 is that the printing system according to (2)~(3), wherein the information of the state of order receiving is represented by the display showing whether the order receiving for prints is normal or not.

(0022)

In the printing system, order receiving information is transmitted from the transmitting means on the part of the printing apparatus to the electronic camera based on the order information received from the electronic camera. The electronic camera displays information of the state of order

receiving from the printing apparatus (information showing whether the order receiving for prints is normal or not).

(0023)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, and it is further possible for a user to confirm whether the state of order receiving is normal or not by the use of the electronic camera.

(0024)

(6) The invention described in claim 6 is that the printing system according to (1), wherein print information generated by the print information providing means includes personal information which makes it possible to call an orderer of prints.

(0025)

In the printing system, it is possible to call an orderer promptly when prints are completed, because it is possible to call an orderer of prints based on information which follows print information.

(0026)

(7) The invention described in claim 7 is that the printing system according to (6), wherein the printing apparatus stated above is equipped with a message transmitting means

and transmits a message with reference to the personal information when prints are completed.

(0027)

In the printing system, it is possible to call an orderer promptly when prints are completed, because it is possible to transmit a message through a telephone or a pager to a print orderer from a message transmitting means of the printing apparatus based on information which follows the print information.

(0028)

(8) The invention described in claim 8 is that the printing system according to (1), wherein the electronic camera is equipped with a display means capable of displaying information and a countdown means, and the countdown means counts down based on the state of order receiving coming from the printing apparatus, while the display means displays the results of the countdown.

(0029)

In the printing system, information of the state of order receiving is transmitted to the electronic camera from the part of the printing apparatus. Then, the electronic camera keeps counting down until completion of prints with

reference to information of the state of order receiving, and displays the results of the countdown on the display means.

(0030)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can confirm the state of order receiving and completion of prints through the display means of the electronic camera.

(0031)

(9) The invention described in claim 9 is that the printing system according to (8), wherein the countdown means counts down based on the state of order receiving coming from the printing apparatus and notifies the end of counting when the counting is ended.

(0032)

In the printing system, information of the state of order receiving is transmitted to the electronic camera from the part of the printing apparatus. Then, the electronic camera keeps counting down until completion of prints with reference to information of the state of order receiving, then, displays the results of the countdown on the display means, and notifies the moment of the end of counting.

(0033)

Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can learn completion of prints through the end of counting.

(0034)

(10) The invention described in claim 10 is that the printing system according to (8), wherein the electronic camera is equipped with a control means which controls various operations, and this control means prohibits deletion of images included in the order information until the countdown means finishes counting.

(0035)

The electronic camera in the printing system counts down until completion of prints with reference to information of the state of order receiving, and thereby, deletion of images is prohibited until the end of counting. Therefore, even when the order information is required to be transmitted again for some reasons, no problem is caused.

(0036)

(11) The invention described in claim 11 is that the printing system according to (1)~(10), wherein the electronic camera is equipped with a control means which generates state information relating to the state of the electronic camera

and adds this state information to the order information, and the control means of the printing apparatus reads the state information added to the order information.

(0037)

In the printing system of the invention, it is possible to know the state (communication speed, residual life of batteries, ON/OFF of image display and presence of usage of external power supply) of the electronic camera on the part of the printing apparatus because information of the state of the electronic camera is transmitted to the printing apparatus, and thereby, the operation time of the electronic camera can be estimated and dead batteries can be prevented in advance. Therefore, it is possible to receive orders accurately for the order information through stable communication.

(0038)

(12) The invention described in claim 12 is that the printing system according to (11), wherein the printing apparatus is equipped with a warning giving means which gives warning by means of display, voice or data transmission, while the control means of the printing apparatus gives warning when batteries of the electronic camera are estimated, based on

the state information, not to last until completion of transmission for order information.

(0039)

In the printing system of the invention, it is possible to know the state (communication speed, residual life of batteries, ON/OFF of image display and presence of usage of external power supply) of the electronic camera on the part of the printing apparatus because information of the state of the electronic camera is transmitted to the printing apparatus, and thereby, it is possible to prevent dead batteries in advance by giving warning when dead batteries are estimated. Therefore, it is possible to receive orders accurately for the order information through stable communication.

(0040)

(13) The invention described in claim 13 is that the printing system according to (12), wherein the control means of the printing apparatus gives warning based on the state information stated above when the electronic camera is not energized by the external power supply.

(0041)

In the printing system of the invention, it is possible to know the state (communication speed, residual life of

batteries, ON/OFF of image display and presence of usage of external power supply) of the electronic camera on the part of the printing apparatus because information of the state of the electronic camera is transmitted to the printing apparatus, and thereby, it is possible to prevent dead batteries in advance by giving warning when external power supply is not used and dead batteries are estimated accordingly. Therefore, it is possible to receive orders accurately for the order information through stable communication.

(0042)

(14) The invention described in claim 14 is that the printing system according to (12), wherein the electronic camera is equipped with a display means capable of displaying information, and receives data from the warning giving means to display warning information from the printing apparatus on the display means.

(0043)

In the printing system of the invention, information of the state of the electronic camera is transmitted to the printing apparatus, and when dead batteries are estimated at the printing apparatus, data from the printing apparatus are received on the part of the electronic camera to display

warning, and thereby, dead batteries are prevented in advance.

Therefore, it is possible to receive orders accurately for the order information through stable communication.

[0044]

[THE EMBODIMENT OF THE INVENTION]

An embodiment of the invention will be explained in detail as follows. In the present embodiment, there will be explained a print order information accepting system composed of an electronic camera which can prepare order information easily and an order accepting device which accepts order information from the electronic camera.

(0045)

(Structure of the print order information accepting system)

The structure of an electronic camera used in the present embodiment will be explained with reference to Fig. 1.

(0046)

Fig. 1 is a function block diagram showing an overall, electrical and schematic structure of electronic camera 100 in the embodiment of the invention.

In the electronic camera 100 shown in Fig. 1, an optical image obtained through an optical system which is

composed of lens 1, aperture-stop 2 and others is formed on a light-accepting plane of image pick-up element 3 such as CCD. Further, at this time, lens 1 and aperture-stop 2 are driven respectively by focus drive circuit 16 and diaphragm drive circuit 15.

(0047)

In this case, the image pick-up element 3 photoelectrically converts an optical image formed on the light-accepting plane into an amount of electric charges, and outputs analog image signals with pulses transmitted from CCD drive circuit 19. Incidentally, the CCD drive circuit 19 can drive the image pick-up element 3 and can also control shutter speed.

(0048)

The analog image signals outputted from the image pick-up element 3 are subjected to CDS (correlation double sampling) in preprocess circuit 4 whereby a noise is reduced, then subjected to AGC whereby gains are adjusted, and are subjected to Knee processing for extension of a dynamic range.

(0049)

Then, after the analog image signals are converted by A-D converter 5 into digital image signals, they are

subjected to luminance processing and color processing in signal processing circuit 6 to be converted into digital video signals (for example, digital data composed of luminance signal (Y) and color difference signals (Cr, Cb)), and outputted to memory controller 7.

(0050)

Further, from the signal processing circuit 6, the digital video signals are outputted to image display section 18, and it is structured so that images obtained through image pick-up conducted by the image pick-up element 3 and images reproduced from a storage means which will be described later can be displayed on the image display section 18. Incidentally, various kinds of information can also be displayed on the image display section 18, in addition to images.

(0051)

Switching of functions related to the foregoing is conducted through data exchange with main microcomputer 8, and it is also possible, in case of necessary, to output exposure information of image pick-up element signal, focus signal and white balance information to the main microcomputer 8.

(0052)

The main microcomputer 8 mainly controls the sequence of photographing, recording and reproduction, and it further conducts, in case of necessary, compression reproduction of photographed images and serial port transmission with external equipment.

(0053)

Now, an explanation will be given here under the assumption that CCITT (at present) and JPEG (or JBIG system) standardized by ISO are used as image compression of an image recording mode.

(0054)

In memory controller 7, digital image data inputted from the signal processing circuit 6 are accumulated in frame memory 9, or on the contrary, image data of the frame memory 9 are outputted to the signal processing circuit 6.

(0055)

The frame memory 9 is an image memory wherein image data corresponding to at least one image area or more can be accumulated, and examples thereof used generally include VRAM, SRAM and DRAM, among which VRAM which can operate independently of CPU bus is used here.

(0056)

Electronic flash 12 is arranged so that its emission timing can be obtained by the main microcomputer 8 which controls photographing sequence.

Serial port driver 13 conducts signal conversion for information transmission between the camera main body and external equipment. As a serial transmission means, there are available recommended standards for conducting serial communication such as RS232C and RS422A, among which RS232C is used here.

(0057)

Sub-microcomputer 14 is one which controls man-machine interface such as switches representing recording, reproduction and frame advancement, and conducts information transmission to the main microcomputer 8 in case of necessary.

(0058)

Diaphragm-drive circuit 15 is composed, for example, of automatic iris, and an aperture value of optical diaphragm 2 is changed through control of the main microcomputer 8.

Focus drive circuit 16 is composed of a stepping motor, for example, and focuses image pickup element 3 on an optical focal surface of a subject by changing a lens position through the control of main microcomputer 8.

(0059)

Image storage section 21 constitutes a storage means, and digital data of a JPEG form which are subjected to image compression processing conducted by main microcomputer and pass through frame memory 9 are recorded in the image storage section 21.

(0060)

Incidentally, the image storage section 21 is represented by a recording/reproduction device employing a semiconductor memory capable of being mounted on and dismounted from the main body, and by a hard disk device capable of being mounted on and dismounted from the main body. When conducting transfer of data with an external computer, it is preferable that a storage medium of this still image storage section 21 is represented by various types of semiconductor memories having interchangeability with a PC card and others.

(0061)

Release SW 31 is a release switch which gives instructions for image recording, and this selection is supplied to sub-microcomputer 14.

Print information inputting section 32 is a print information donating means which conducts setting and input

for print information (print designating information which designates images to be printed, print size information which sets the print size, print quantity information which sets a quantity of prints, and print finish information which relates to print finish).

(0062)

Order button 33 is a transmission starting means which generates transmission starting signals when it is pressed down, and when the print information and digital image information are transmitted to the outside as will be described later by the transmission starting signals.

(0063)

The numeral 40 represents a transmitter-receiver unit which transmits and receives data through infrared rays and an electric wave, and it transmits print information and digital image information by means of the aforesaid transmission starting signals and receives information from the outside.

(0064)

The numeral 50 represents an electronic buzzer that generates a prescribed sound at each kind of operation, and in the present embodiment, it generates a prescribed message sound even when printing is completed.

Incidentally, Fig. 2 is a perspective view showing the external structure of the electronic camera 100 stated earlier, and it especially shows the top and the back of the electronic camera. On the right hand side on the top of the camera, there is arranged release switch 31, while on the left hand side on the top, there is arranged order button 33. On the back of the camera, there is arranged image display section 18 such as an LCD which is structured to be capable of indicating images and various types of information. In addition, on the area below the image display section 18, there are arranged menu button 32a, selecting buttons 32b and 32c, and determination button 32d which all serve as print information inputting section 32. Incidentally, on the front side (not shown) of the camera, there is arranged a transmitting and receiving section of the transmitter-receiver unit 40.

(0065)

Now, photofinisher 200 wherein an order receiving device is structured will be explained with reference to Figs. 3 and 4. The photofinisher 200 is composed of order counter 210 which receives orders from users and of printing apparatus 220 which makes prints from digital image information in accordance with an order.

(0066)

The order counter 210 plays a role of a table on which the electronic camera 100 shown in Figs. 1 and 2 is placed, and transmitter-receiver unit for order receiving 211 is arranged at the position which faces transmitter-receiver unit 40 of the electronic camera 100. Order information received by the transmitter-receiver unit for order receiving 211 is supplied to the printing apparatus 220. Further, there is provided coupon issuing section 212 which issues a coupon (order evidence) that is handed to a user when an order is received from the user.

(0067)

The printing apparatus 220 is one which conducts printing in accordance with order information, and it is provided with print exit 221 through which the print is outputted to the outside. In addition, main microcomputer 222 which controls an apparatus entirely is provided, and there are provided printer 223 which outputs prints under the control of the main microcomputer 222 and display section 224 which displays message concerning information of order receiving.

(0068)

There are further provided tone generating section 225 which generates tones corresponding to characters used for transmitting character message to a cordless telephone and a pager, and voice composing section 226 which generates message sound that is used when calling a user through a subscribed telephone or a cordless telephone. There further is provided network control unit (NCU) 227 which dials to a subscribed telephone, a cordless telephone or a pager of a user through communication line 300, and transmits the tone stated above and the message sound to the user.

(0069)

(Operations in the system to receive print order information)

Order receiving operations in the system to receive print order information will now be explained.

A user who has used electronic camera 100 for photographing and is going to have prints made by photofinisher 200 first prepares print information by the use of print information inputting section 32 provided on the back of the electronic camera 100.

(0070)

For example, the user presses menu button 32a down to make a print information preparing menu to be displayed on the image display section, and uses the print information

preparing menu to prepare the print information for obtaining desired prints.

(0071)

In this case, selecting buttons 32b and 32c are used for the selection of items, and determination button 32d is pressed down when each item is determined. When the determination button 32d is pressed down, main microcomputer 8 prepares order information wherein the prepared print information corresponds to digital image information, and this order information is stored in an empty area of image storage section 21.

(0072)

After the preparation of the aforesaid order information has been completed, the user takes the electronic camera 100 to the photofinisher 200, and places it on order counter 210. When the user presses order button 33 of the electronic camera 100 down, main microcomputer 8 reads the aforesaid order information and supplies it to transmitter-receiver unit 40. Due to this, the order information is transmitted through infrared rays or the like from the transmitter-receiver unit 40 to transmitter-receiver unit for receiving order 211.

(0073)

Incidentally, in the explanation above, preparation of order information is conducted when the determination button 32d is pressed down (at the timing for finish (decision) of preparation of print information). However, it is also possible to employ an arrangement wherein order information is prepared when order button 33 is pressed down.

(0074)

In this case, data of completion of order receiving can also be transmitted from the photofinisher 200 toward electronic camera 100 at the moment when order information has been transmitted from the electronic camera 100 to the photofinisher 200.

(0075)

Incidentally, in this case, data transmitting and receiving based on the standard such as the known IrDA are preferable, but other system (ASK system) and data transmitting and receiving employing other electromagnetic waves such as visible light or an electric wave can also be used.

(0076)

Owing to the preparation of print information stated above, it is possible to prepare order information through simple operations on the print information inputting section

32 or the control section of the electronic camera, which makes it possible for photofinisher 200 to receive orders accurately only by transmitting the order information.

(0077)

When the order information is represented by information including the print information prepared by the user and digital image information, photofinisher 200 can receive orders accurately by transmitting the order information.

(0078)

Print information which can be prepared by the user at this stage includes print designating information which designates images to be printed, print size information which sets the print size, information of the number of prints which sets the number of prints, and print finish information related to print finish.

(0079)

Since these various kinds of information are included, a user can prepare unaided sufficient order information in advance on the print information inputting section 32 of a electronic camera, whereby time required by the order in the photofinisher 200 can be reduced. In addition, order counter

210 can be made to be an unmanned counter because a clerk does not need to write out a slip.

(0080)

Here, main microcomputer 222 of printing apparatus 220 calculates the print finishing hour for each order information received, and displays it on display section 224. This print finishing hour can be obtained from the processing capacity of printer 223 and from the total amount of order information received by that time.

(0081)

For example, the listing of the order number, name and the time and date to finish printing (information of order receiving) illustrated in Fig. 5 is shown on display section 224. Due to this, the time and date to finish printing is displayed immediately after the order information is received at order counter 210, which makes a user to learn that the order information has been transmitted correctly and to learn correctly the print finishing hour (Fig. 5 (a)) or the waiting time (Fig. 5 (b)).

(0082)

When electronic camera 100 which is transmitting order information is present, it is possible to employ a method wherein columns for the time and date to finish printing and

the waiting time are displayed to be a blank or under order-receiving while displaying the order receiving number and the name (see columns in Fig. 5 (a), (b) lowermost column, order-receiving number 97100100106), then the time and date to finish printing and the waiting time are displayed at the moment when order information has been transmitted correctly.

(0083)

Owing to the foregoing, it is possible for a user to learn that the order information was (has been) transmitted correctly, and to learn the print finishing hour and the waiting time concretely and correctly.

(0084)

When an error is caused in the course of transmitting order information from electronic camera 100, it is possible to secure correctness by indicating the order number and the name in a flashing manner, or by indicating the contents of error occurrence.

(0085)

Further, together with such display on the display section 224, main microcomputer 222 gives a command for issuance of a coupon to coupon issuance section 212 so that a coupon may be issued to a user when an order is received. On this coupon, contents of order information, charges, and the

aforsaid time and date to finish printing can be printed in addition to the order number and the user name.

(0086)

Incidentally, in place of issuing a coupon, it is also possible to write data corresponding to the coupon on a magnetic card or an IC card brought by a user, and to deduct the charges from the magnetic card or the IC card in exchange for the prints.

(0087)

In addition to display on display section 224 conducted on the part of photofinisher 200, it is possible to transmit information of order receiving to electronic camera 100. In this case, after the order information is received, main microcomputer 222 transmits the order receiving number and the time and date to finish printing among information of order receiving from transmitter-receiver unit for order receiving 211 through infrared rays.

(0088)

In this case, after order information has been transmitted from the part of the electronic camera 100, the receiving state needs to be present. Therefore, main microcomputer 8 makes the transmitter-receiver unit 40 to be

on its receiving state for standby, after completion of transmission of the order information.

(0089)

Due to this, a user can confirm whether order information has been transmitted correctly, or an error has been caused in the order information. When an error has been caused, an arrangement wherein the order information is transmitted again by a command of main microcomputer 8 can be employed.

(0090)

Due to this, accurate order receiving can be conducted about order information, and a user can confirm the order receiving by means of the electronic camera 100.

(0091)

In this case, on the part of the electronic camera 100, it is possible to inform the user of whether the order information has been transmitted correctly or an error has been caused, by generating a prescribed sound from electronic buzzer 50. For example, the main microcomputer 8 controls to combine an interval and a length of a sound generated by the electronic buzzer 50 to distinguish between normality and an error.

(0092)

On the part of the electronic camera 100, information of order receiving can also be displayed on image display section 18 based on the information of order receiving coming from photofinisher 200. In this case, it is also possible to display the time and date of completion of prints, in addition to the display of normality/error, whereby a user can confirm the contents of order receiving concretely with the electronic camera 100. Further, the waiting time up to completion of prints can be displayed in place of the concrete time and date of completion of prints.

(0093)

It is further possible to arrange so that main microcomputer 222 counts down with reference to data of the time and date of completion of prints and of the waiting time, and thereby displays the residual waiting time to completion of prints momentarily on image display section 18.

(0094)

Incidentally, when the residual waiting time is displayed continuously, battery consumption is accelerated. It is therefore possible to arrange so that the display is suspended in the course of countdown, and electronic buzzer 50 makes the completion of prints known at the moment when counting is finished. It is further possible to arrange so

that display on image display section 18 is suspended in the course of countdown, and completion of prints is displayed on the image display section 18 when counting is finished.

(0095)

Due to this, accurate order receiving can be conducted with regard to order information prepared on the part of a electronic camera, and a user can learn completion of prints when counting is finished.

(0096)

Main microcomputer 8 prohibits elimination of an image included in order information until the counting is finished in the course of the countdown. Namely, even when a user operates to eliminate an image while main microcomputer 8 is counting down, elimination of the image included in order information is not executed. By doing this, the order information can surely be transmitted again even when an error is caused in the course of printing in photofinisher 200.

(0097)

Incidentally, when user information is set in electronic camera 100 in advance, a telephone number included in the user information (information such as a telephone number or a pager number with which the print orderer can be

called: hereinafter referred to as calling information) is transmitted, while when user information is not set in electronic camera 100 in advance, calling information inputted in accordance with menu in the course of preparing print information is transmitted, both to photofinisher 200 together with order information, as a part of the print information.

(0098)

When these user information are included, the time to put down these information can be saved when ordering in photofinisher 200, thus the time required is shortened. Further, it is not necessary for a store clerk to write a slip, and order counter 210 can be made an unmanned counter.

(0099)

Due to the foregoing, it is possible to call the print orderer from photofinisher 200, which therefore makes it possible to call the print orderer promptly when prints are completed or when an error is caused.

(0100)

By using these user information, main microcomputer 222 makes NCU 227 to dial a person contacted by a user so that a tone corresponding to a message text may be outputted from tone generating section 225 or message voice may be outputted

from voice composing section 226. It is also possible to arrange so that the main microcomputer 222 and NCU 228 may transmit an electronic mail telling completion of prints to the electronic mail address of the user.

(0101)

Due to the foregoing, it is possible to inform the print orderer of completion of prints or occurrence of an error from photofinisher 200, which therefore makes it possible to call the print orderer promptly not only when prints are completed but also when an error is caused.

(0102)

Incidentally, in the communication from electronic camera 100 to photofinisher 200, it sometimes happens that a battery does not last to complete communication for the order information, depending on a quantity of data, communication speed and residual battery capacity. It is therefore preferable to transmit the state of the electronic camera and a total quantity of order information from the electronic camera 100 to the photofinisher 200 to prevent the aforesaid problem.

(0103)

Namely, it is possible that main microcomputer 8 generates information about a total quantity (a total

quantity of data) of order information concerning the order information stated above and this information is included in the order information. By doing this, the photofinisher 200 can grasp the approximate time required for communication. As a result, the photofinisher 200 can make an estimate of the battery consumption of an electronic camera, and can give warning from it. Due to this, it is possible to prevent communication troubles caused by dead batteries, which therefore makes it possible to conduct accurate order receiving for the order information through stable communication.

Further, it is possible that main microcomputer 8 generates state information about the state of an electronic camera, and this information is included in the order information. This state information is included in the order information and is transmitted each time the state of the electronic camera is changed, or at regular intervals. It is assumed that this state information is analyzed by main microcomputer 222 of printing apparatus 220 in the arrangement.

(0104)

Incidentally, the state information is considered to be any one of the following items or a combination of the following plural items.

- Information about the presence of connection with external power supply

- Information about battery types (manganese cell, alkaline cell, nickel-cadmium battery, nickel-hydrogen battery and lithium battery)

- Information about the number of batteries

- Information about the residual capacity of batteries

- Information about the presence (ON/OFF) of display on image display section 18

- Information about the discrimination number specific to an electronic camera

- Information about the discrimination number of a user

- Information about consumed power

- Information about warning display by an electronic camera

- Information about the maximum communication speed

- Information about the operatable time

(0105)

By doing this, the photofinisher 200 can grasp the approximate time required for communication and the state of an electronic camera each time the state of the electronic camera is changed or at regular intervals (on a real time basis).

(0106)

When it is estimated by operation of main microcomputer 222 that a battery can not last to complete transmission of the order information, printing apparatus 220 gives warning through the following. This warning is given especially when external power is not supplied to electronic camera 100.

- Warning display on display section 224
- Output of warning message by voice composing section

226

- Transmission of warning message employing NCU 227
- Transmission of warning message data to electronic

camera 100

(0107)

When the warning message data are transmitted to electronic camera 100, the warning is given through warning display on image display section 18 on the part of electronic

camera 100 or through generation of warning sound made by electronic buzzer 50.

(0108)

The display of the aforesaid warning can be conducted simultaneously with the display of the print completion time or of the waiting time on display section 224 or on image display section 18, which makes a store clerk in the photofinisher and a user to become aware surely.

(0109)

Due to this, it is possible to prevent dead batteries, and to conduct accurate order receiving for the order information through stable communication.

(0110)

[THE EFFECT OF THE INVENTION]

As explained in detailed above with the embodiment, the following effects can be obtained by each invention described in the specification.

(0111)

(1) In the invention of the print system described in claim 1, order receiving information is generated based on order information received from the electronic camera on the part of the printing apparatus, and the display means is caused to display the order receiving information. Therefore, it is

possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a printing system wherein a user can confirm the state of order receiving can be realized.

(0112)

(2) In the invention of the print system described in claim 2, order receiving information is transmitted from the transmitting means on the part of the printing apparatus to the electronic camera based on the order information received from the electronic camera. Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can confirm the state of order receiving by the use of the electronic camera.

(0113)

(3) In the invention of the print system described in claim 3, order receiving information is transmitted from the transmitting means on the part of the printing apparatus to the electronic camera based on the order information received from the electronic camera. The electronic camera displays information of the state of order receiving from the printing apparatus on the display means. Therefore, it is possible to receive orders accurately concerning the order information

prepared on the part of the electronic camera, whereby a user can confirm the state of order receiving on the display means of the electronic camera.

(0114)

(4) In the invention of the print system described in claim 4, the electronic camera displays information of the state of order receiving from the printing apparatus (the waiting time up to completion of prints). Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can confirm the state of waiting time by the use of the electronic camera

(0115)

(5) In the invention of the print system described in claim 5, the electronic camera displays information of the state of order receiving from the printing apparatus (information showing whether the order receiving for prints is normal or not). Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, and it is further possible for a user to confirm whether the state of order receiving is normal or not by the use of the electronic camera.

(0116)

(6) In the invention of the print system described in claim 6, it is possible to call an orderer promptly when prints are completed, because it is possible to call an orderer of prints based on information which follows print information.

(0117)

(7) In the invention of the print system described in claim 7, it is possible to call an orderer promptly when prints are completed, because it is possible to transmit a message through a telephone or a pager to a print orderer from a message transmitting means of the printing apparatus based on information which follows the print information.

(0118)

(8) In the invention of the print system described in claim 8, the electronic camera keeps counting down until completion of prints with reference to information of the state of order receiving, and displays the results of the countdown on the display means.

(0119)

(9) In the invention of the print system described in claim 9, the electronic camera keeps counting down until completion of prints with reference to information of the state of order receiving, then, displays the results of the countdown on the display means, and notifies the moment of the end of

counting. Therefore, it is possible to receive orders accurately concerning the order information prepared on the part of the electronic camera, whereby a user can learn completion of prints through the end of counting.

(0120)

(10) In the invention of the print system described in claim 10, the electronic camera counts down until completion of prints with reference to information of the state of order receiving, and thereby, deletion of images is prohibited until the end of counting. Therefore, even when the order information is required to be transmitted again for some reasons, no problem is caused.

(0121)

(11) In the invention of the print system described in claim 11, it is possible to know the state (communication speed, residual life of batteries, ON/OFF of image display and presence of usage of external power supply) of the electronic camera on the part of the printing apparatus because information of the state of the electronic camera is transmitted to the printing apparatus, and thereby, the operation time of the electronic camera can be estimated and dead batteries can be prevented in advance. Therefore, it is

possible to receive orders accurately for the order information through stable communication.

(0122)

(12) In the invention of the print system described in claim 12, it is possible to know the state (communication speed, residual life of batteries, ON/OFF of image display and presence of usage of external power supply) of the electronic camera on the part of the printing apparatus because information of the state of the electronic camera is transmitted to the printing apparatus, and thereby, it is possible to prevent dead batteries in advance by giving warning when dead batteries are estimated. Therefore, it is possible to receive orders accurately for the order information through stable communication.

(0123)

(13) In the invention of the print system described in claim 13, it is possible to know the state (communication speed, residual life of batteries, ON/OFF of image display and presence of usage of external power supply) of the electronic camera on the part of the printing apparatus because information of the state of the electronic camera is transmitted to the printing apparatus, and thereby, it is possible to prevent dead batteries in advance by giving

warning when external power supply is not used and dead batteries are estimated accordingly. Therefore, it is possible to receive orders accurately for the order information through stable communication.

(0124)

(14) In the invention of the print system described in claim 14, information of the state of the electronic camera is transmitted to the printing apparatus, and when dead batteries are estimated at the printing apparatus, data from the printing apparatus are received on the part of the electronic camera to display warning, and thereby, dead batteries are prevented in advance. Therefore, it is possible to receive orders accurately for the order information through stable communication.

[BRIEF DESCRIPTION OF THE DRAWINGS]

Fig. 1 is a functional block diagram showing the structure of an electronic camera used in an embodiment of the invention.

Fig. 2 is a perspective view showing an appearance of an electronic camera in an embodiment of the invention.

Fig. 3 is a functional block diagram showing the structure of a photofinisher representing an order receiving

apparatus in a print order information receiving system in an embodiment of the invention.

Fig. 4 is a perspective view showing the external structure of a photofinisher representing an order receiving apparatus in a print order information receiving system in an embodiment of the invention.

Fig. 5 is an illustration showing how order receiving of an order receiving apparatus in an embodiment of the invention is displayed.

[Explanation for marks]

- 1 lens
- 2 aperture-stop
- 3 image pick-up element
- 4 preprocess circuit
- 5 A-D converter
- 6 signal processing circuit
- 7 memory controller
- 8 main microcomputer
- 9 frame memory
- 12 electronic flash
- 13 serial port driver
- 14 sub-microcomputer
- 15 diaphragm-drive circuit

| | |
|-----|---|
| 16 | focus drive circuit |
| 18 | image display section |
| 19 | CCD drive circuit |
| 21 | image storage section |
| 31 | release SW |
| 32 | print information inputting section |
| 33 | order button |
| 40 | transmitter-receiver unit |
| 50 | electronic buzzer |
| 200 | photofinisher |
| 210 | order counter |
| 211 | transmitter-receiver unit for order receiving |
| 220 | printing apparatus |
| 221 | print exit |
| 222 | main microcomputer |
| 223 | printer |
| 224 | display section |
| 225 | tone generating section |
| 226 | voice composing section |
| 227 | network control unit (NCU) |

[NAME OF DOCUMENT]

ABSTRACT

[ABSTRACT]

[OBJECT] To realize a print system capable of conducting receiving accurately the produced order information and confirming the situation in the receiving and the waiting time by a user.

[SOLVING MEANS] A printing system equipped with an electronic camera 100 which prepares digital image information and with a printing apparatus 200 which receives order information from the electronic camera to conduct printing, wherein the electronic camera to conduct printing, wherein the electronic camera is equipped with a print information providing means 32 which generates order information by providing print information corresponded to the digital image information and with a transmitting-receiving means 40 which conducts transmission and receiving of data, while the printing apparatus is equipped with a receiving means 211 which receives order information from the electronic camera, a printing means 223 which makes prints based on the received order information, a display means 224 which displays information, and a control means 222 which generates order receiving information based on the received order information

and makes the display means to display the order receiving information.

[Selected drawing] Fig. 1

[NAME OF THE DOCUMENT] Drawings

FIG. 1

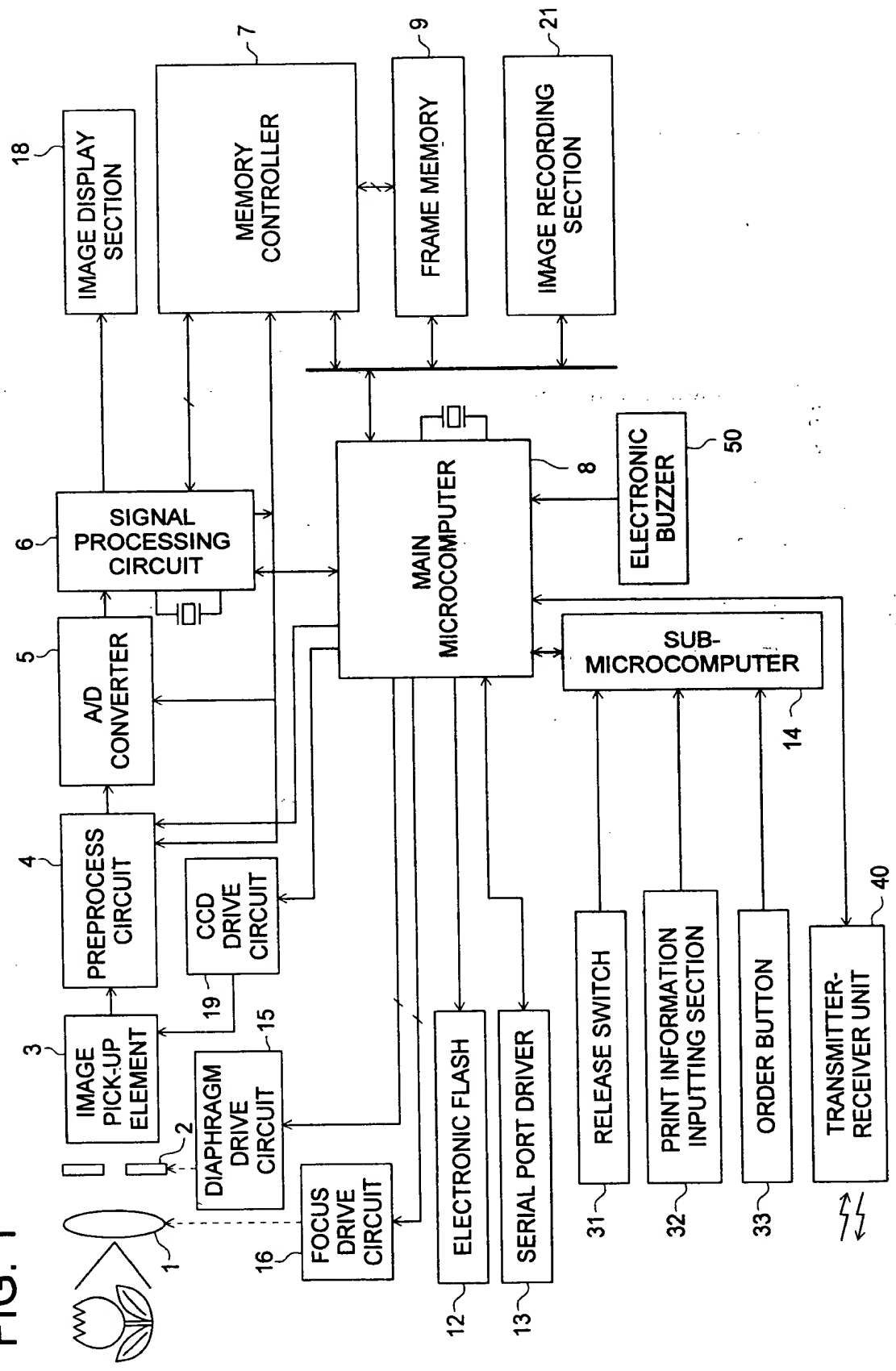


FIG. 2

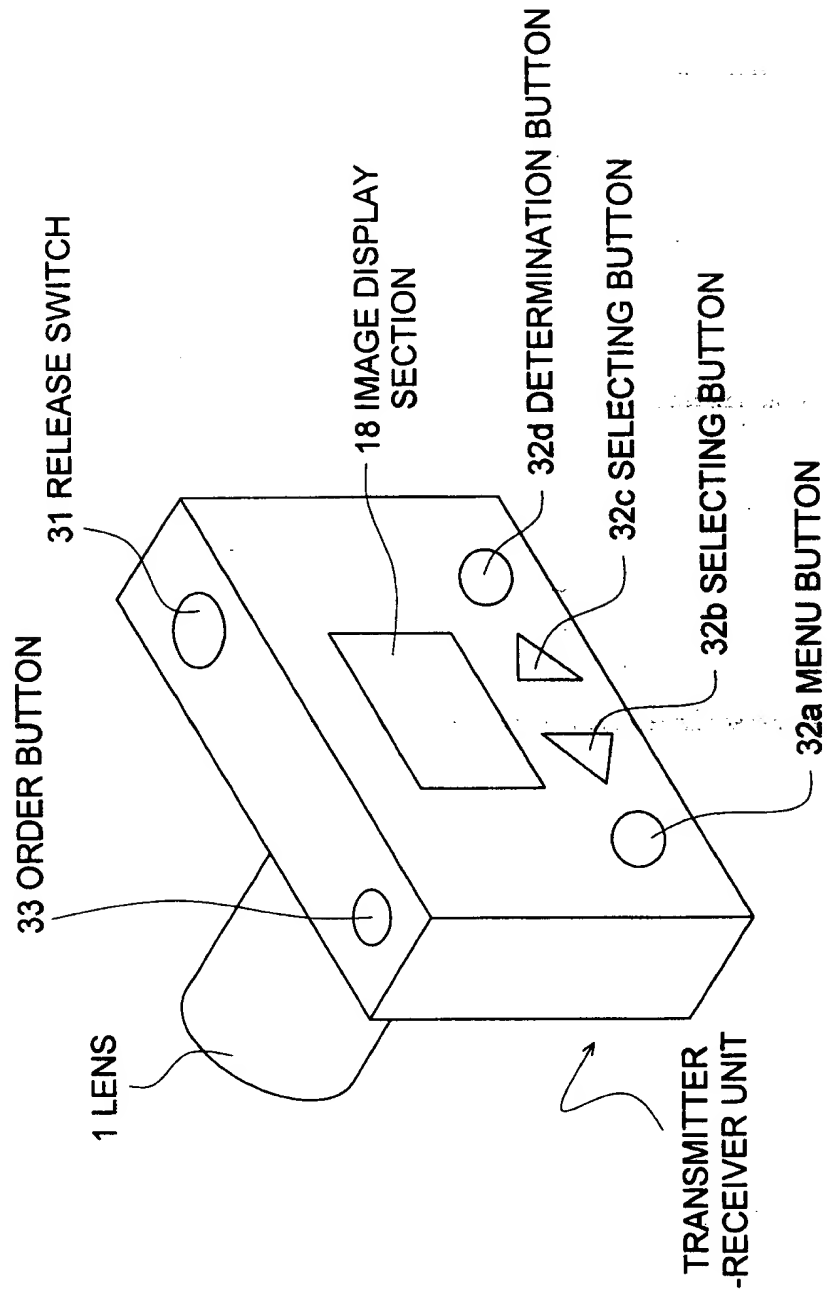


FIG. 3

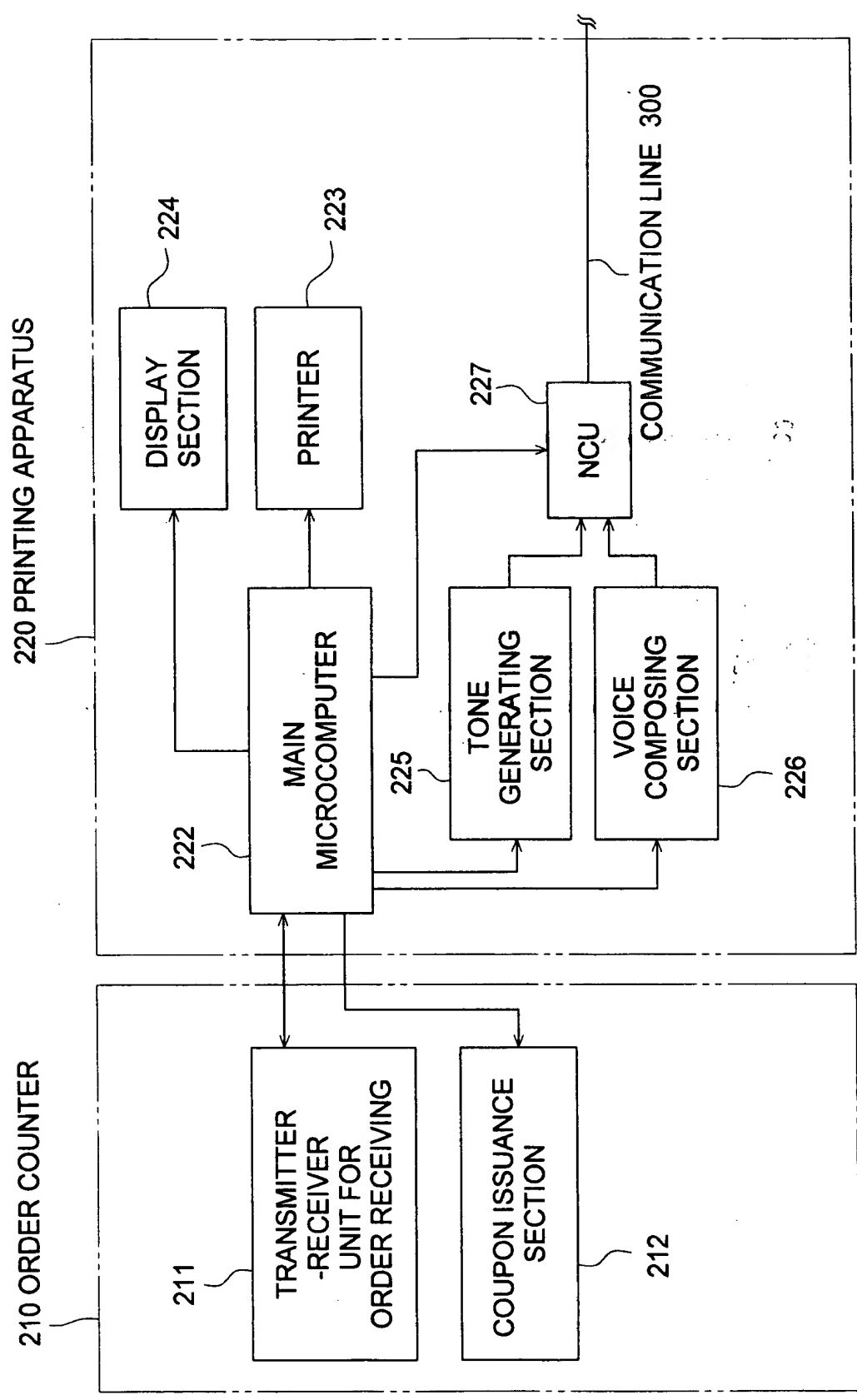


FIG. 4

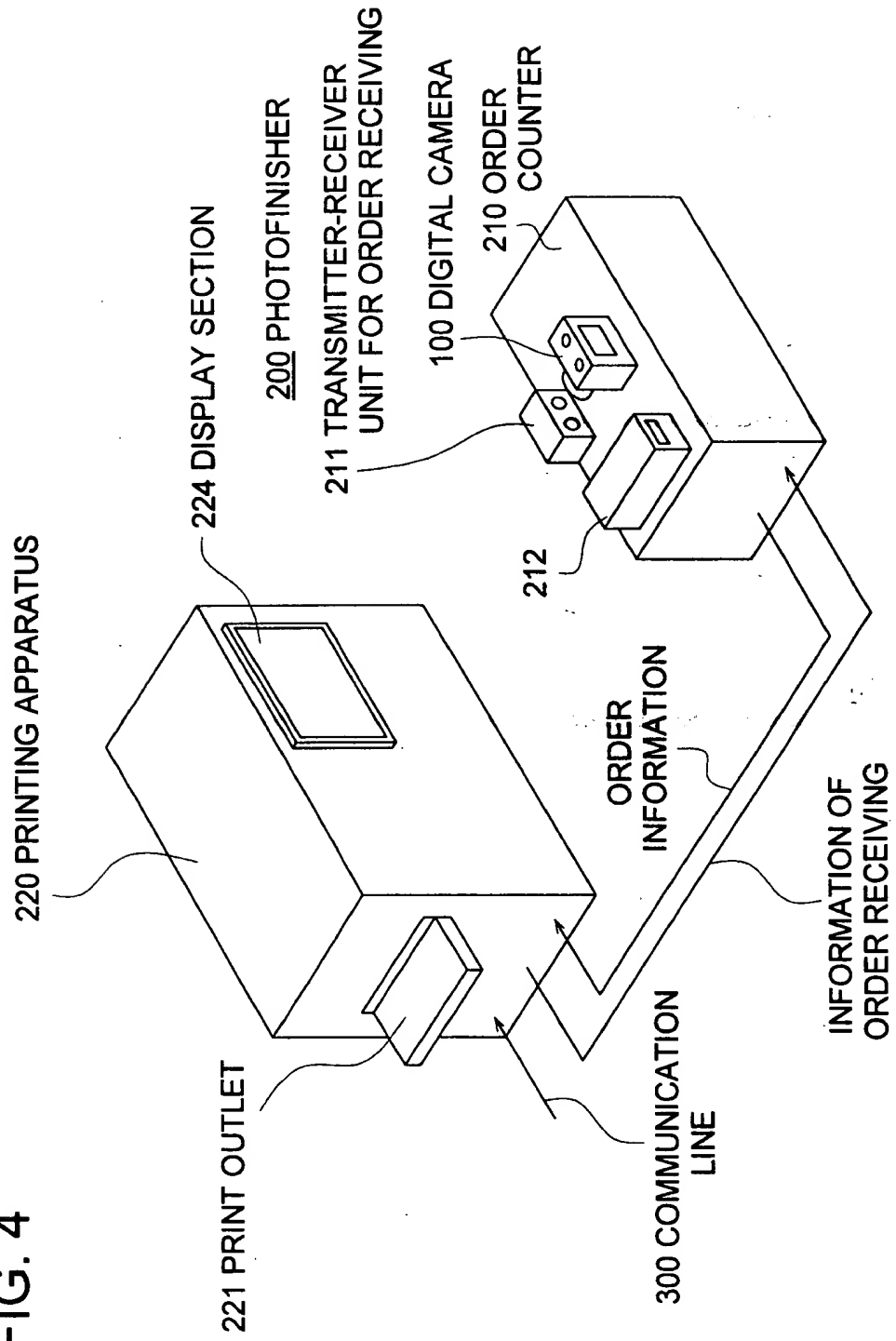


FIG. 5 (a)

224 DISPLAY SECTION

| ORDER RECEIVING NUMBER | CUSTOMER NAMES | THE TIME AND DATE TO FINISH PRINTING |
|---------------------------|-------------------|---|
| 97100100100 | 田村 様 | 97 / 10 / 01 11 : 00 |
| 97100100101 | 高崎 様 | 97 / 10 / 01 11 : 12 |
| 97100100102 | 佐堂 様 | 97 / 10 / 01 11 : 18 |
| 97100100103 | 田口 様 | 97 / 10 / 01 11 : 45 |
| 97100100104 | 加堂 様 | 97 / 10 / 01 11 : 28 |
| 97100100105 | 山田 様 | 97 / 10 / 01 11 : 30 |
| 97100100106 | 井島 様 | - / - / - - : - |

FIG. 5 (b)

224 DISPLAY SECTION

| ORDER RECEIVING NUMBER | CUSTOMER NAMES | WAITING TIME |
|---------------------------|-------------------|----------------------------------|
| 97100100100 | 田村 様 | FINISH |
| 97100100101 | 高崎 様 | IN PROCESS OF PRINTING |
| 97100100102 | 佐堂 様 | 10 MINUTES |
| 97100100103 | 田口 様 | 25 MINUTES |
| 97100100104 | 加堂 様 | 45 MINUTES |
| 97100100105 | 山田 様 | 60 MINUTES |
| 97100100106 | 井島 様 | IN PROCESS OF ORDER RECEIVING |